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Gary M. Hartman

July 24, 2006  
DateU.S. Patent Application Serial No. **09/524,227****TECHNOLOGY CENTER 1700 PERSONNEL:**

**Attention: EXAMINER BRET P. CHEN**  
**Phone: (571) 272-1417**

THE FOLLOWING **10**-PAGE DOCUMENT IS A**RESPONSE AFTER FINAL**

including:

- Response under 37 CFR §1.116
- Notice of Appeal
- Appeal Brief under 37 CFR §41.37
- Reply Brief under 37 CFR §41.41
- Request for Continued Examination (RCE) Transmittal
- Other:

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 09/524,227 Confirmation No. **6813**  
Applicant : Irene T. Spitsberg  
Filed: : March 13, 2000  
TC/Art Unit: : 1762  
Examiner : Bret P. Chen  
  
Docket No. : 13DV-13004  
Customer No. : 30952

Commissioner for Patents  
P.O. Box 1450  
Alexandria VA 22313-1450

REPLY BRIEF UNDER 37 CFR §41.41

This is a Reply Brief to the Examiner's Answer dated May 24, 2006, which was filed in response to Appellant's Appeal Brief filed April 19, 2006. A correct copy of the rejected claims was previously set forth in the Claim Appendix of Appellant's Appeal Brief, and therefore is not provided herewith.

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**Re "Response to Argument"**

The Examiner's Answer does not contain any new grounds of rejection, and the "Grounds for Rejection" (Section 9) of the Examiner's Answer appears to be consistent in scope with the grounds set forth in the final rejection dated May 26, 2005 (Paper No. 20050524). Therefore, the following is limited to responding to statements made in the "Response to Argument" (Section 10) of the Examiner's Answer.

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A. Though recrystallization and smoothing are two very different coating characteristics, and both are required by Appellant's rejected claims, the Examiner's Answer appears to use recrystallization and smoothing interchangeably. For example, the Examiner's Answer at page 24, last full paragraph, states:

In addition, there is no recitation anywhere in the appellant's specification that the recrystallization of the diffusion bond coat could not be performed; it just mentions that it would be expected to reduce TBC life and inhibit crack propagation (p.4 lines 1-15). Hence, it is the examiner's position that the appellant's specification does not preclude the recrystallization of the diffusion bond coat but presumes some disadvantages.

Though the Examiner is contending that Page 4, Lines 1-15, of Appellant's specification (the "AAPA") discusses recrystallization, it instead is limited to discussing the adverse effects of smoothing a diffusion aluminide bond coat (such as by polishing), and is completely silent on the issue of recrystallization.

As will be evident from the remainder of this Reply Brief, the process and effect of smoothing a diffusion bond coat is a key claimed aspect of Appellant's invention, and must not be confused or overlooked when assessing the patentability of the rejected claims.

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B. The Examiner's Answer does not rebut Appellant's position that the AAPA teaches away from smoothing a diffusion aluminide bond coat. While page 22 of the Examiner's Answer correctly introduces Appellant's arguments as based on smoothing and recrystallizing a diffusion bond coat, the Examiner's summary of Appellant's arguments (immediately preceding the Examiner's analysis) narrowly and incorrectly states that Appellant's arguments are only concerned with whether the AAPA teaches away from recrystallizing a diffusion aluminide bond coat:

To that end, the appellant argues that the combination of references cannot be properly combined because: 1) the AAPA teaches away from recrystallizing the diffusion aluminide bond coat and 2) Nakamura does not teach a TBC on the diffusion bond coat.

Examiner's Answer at Page 23, last paragraph under "Whether AAPA and Nakamura fail to teach claimed invention."

Thereafter, the Examiner's Answer contains only one comment regarding the issue of smoothing, and then when merely acknowledging that the AAPA is limited to smoothing an overlay bond coat (Examiner's Answer at page 24, fifth full paragraph: "the specification on p. 3 lines 6-33 teaches an advantage of a smoother finish for the bond coat, albeit an overlay bond coat").

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C. To the limited extent that the Examiner's Answer relies on the AAPA for teachings regarding smoothing (as discussed above), such reliance is based on only selective portions of the AAPA instead of the AAPA as a whole.<sup>1</sup>

For example:

It is the examiner's position that the AAPA does not teach away from recrystallizing the bond coat. Indeed, the specification on p.3 lines 6-33 teaches an advantage of a smoother finish for the bond coat, albeit an overlay bond coat. One skilled in the art would reasonably expect that this advantage would be obtained for the diffusion aluminide bond coat.

Examiner's Answer, Page 24, Fifth full paragraph.

Aside from confusingly using "recrystallization" and "smoothing" in a manner that incorrectly suggests these terms are interchangeable, and aside from the fact that the AAPA discusses smoothing but never recrystallization, the Examiner's Answer overlooks the fact that the AAPA clearly refutes the conclusion in the last sentence of the above passage with the following:

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<sup>1</sup> "A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." MPEP §2141.02, citing *W.L. Gore & Assoc. v. Garlock, Inc.*, 220 USPQ 303, 311 (Fed. Cir. 1983)

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polishing a diffusion aluminide bond coat would be expected to reduce TBC life, since sufficient surface roughness of the bond coat would be desired to promote adhesion of the alumina to the bond coat, and to inhibit crack propagation through the alumina and alumina-bond coat interface. As a result, conventional practice has been to grit blast the surface of a diffusion aluminide bond coat to increase its roughness to about 50 microinches (about 1.25 micrometers) Ra or more before depositing the TBC.

Appellant's Specification, Paragraph bridging Pages 3 and 4.

D. The Examiner's Answer at page 24, sixth full paragraph, states:

With respect to appellant's assertion that there is reduced adhesion of the TBC, it is noted that there is no evidence of record to show that the TBC formed in the appellant's claimed method adheres as well as or better than that of the AAPA with the roughened surface.

To the contrary, Trial #1 (starting at Page 13, Line 16, of Appellant's specification) makes this very comparison (note that, at Page 4, lines 11-15, grit blasting is a surface roughening treatment).

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E. The Examiner's Answer suggests that Appellant may have failed to disclose the best mode or otherwise provide an enabling disclosure:

Assuming arguendo that the AAPA does teach away from the recrystallization of the diffusion bond coat, how does the appellant do the same and have it work? Independent claim 1 merely recites "recrystallizing at least a surface region of the aluminide bond coat during or prior to depositing the thermal barrier coating on the surface of the aluminide bond coat", which is precisely what the appellant states that the AAPA teaches away from. Simply put, if the AAPA teaches away from recrystallizing the diffusion bond coat because of certain disadvantages, how does the appellant do it and succeed? It is the examiner's position that there may be some process limitation not currently recited in the instant claims which produces this success.

Examiner's Answer, Page 25, First full paragraph.

First, this passage again confusingly and/or interchangeably uses the terms "recrystallizing" and "smoothing." Second, claim 1 requires both recrystallization and smoothing of a diffusion bond coat, and not just recrystallization. Third, Appellant's argument is that the AAPA teaches away from smoothing a diffusion bond coat, not whether the AAPA teaches away from recrystallizing a diffusion bond coat - as stated before, the AAPA is completely silent as to recrystallization of a diffusion bond coat, and instead

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discusses only the adverse effects of smoothing a diffusion bond coat, such as by polishing. Therefore, the answer to "how does the appellant do it and succeed?" is that Appellant's process not only recrystallizes a diffusion bond coat (which the AAPA does not mention), but is also carried out to smooth the diffusion bond coat (which is contrary to the AAPA).

F. Finally, *Issue 2* of the Examiner's Answer (Answer at Page 22, Lines 10-12, and starting on Page 25 under the heading "Issue 2: Whether Nakamura can be combined if it does not teach a TBC") is merely a subsidiary issue of the foregoing sections of this Reply Brief, namely, whether the recrystallizing (and inherently smoothing) effect sought by Nakamura for a diffusion coating used as an outer (non-bond coat) coating can be properly combined with the AAPA, even though the AAPA expressly teaches away from smoothing a diffusion coating used as a bond coat for a TBC. Therefore, Appellant believes that the arguments necessary to address "Issue 2" have already been made.

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**CLOSING**

Appellant again respectfully requests that this Honorable Board  
reverse the Examiner's final rejections under 35 USC §103.

Respectfully submitted,

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